

Agency: National Marine Fisheries Service
Alaska Region, Sustainable Fisheries Division

and,

The North Pacific Fishery Management Council

Subject: Informal consultation on proposed amendments to the Steller sea lion conservation measures for the Pollock, Pacific cod, and Atka mackerel fisheries in the Gulf of Alaska, Bering Sea and Aleutian Islands areas.

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1 INTRODUCTION

On October 16, 2003 the North Pacific Fishery Management Council (Council) forwarded to the National Marine Fisheries Service (NOAA Fisheries) a request for informal consultation on proposed amendments to the Steller sea lion conservation measures currently implemented in regulations for areas within the Gulf of Alaska management area. The proposal package consisted of a description of the development process for the proposal, the proposed changes, and rationale (NPFMC, 2003).

In April 2003, the North Pacific Fishery Management Council instructed its Steller Sea Lion Mitigation Committee (SSLMC) to examine the existing Steller sea lion protection measures in the Gulf of Alaska and to propose mitigation alternatives for the fishery in order to relieve some economic burden. The SSLMC met several times in 2003 and at its August, 2003 meeting agreed to submit to the Council a group of proposed changes to the Gulf of Alaska groundfish fishery. These proposed changes are described in the Council's proposal and summarized in section II below. At its October 2003 meeting, the Council reviewed the SSLMC's proposed measures, and forwarding this package to NOAA Fisheries for review and informal consultation under the Endangered Species Act (ESA).

The purpose of this document is to informally review the proposed changes to the conservation measures and to determine if any adverse affects are likely to Steller sea lions or their designated critical habitat. If adverse affects are deemed likely beyond those already considered in previous consultations, then reinitiation of formal section 7 consultation would be necessary. The informal section 7 consultation process under the ESA is described below.

1.1 The Informal Section 7 Process

The informal consultation process is described in the Endangered Species Consultation Handbook (USFWS and NMFS, 1998) and in regulation at 50 CFR §402.13. It is intended to be a series of conversations on a proposed action between the consulting agency and the expert agency in order to provide early feedback on the potential impacts to ESA listed species and their critical habitat and possible mitigation options. In fact, most consultations are conducted informally resulting in actions which are not likely to adversely affect listed species, which is the goal of the ESA. The definition of conclusions involving adverse affects is described in the Endangered Species Consultation Handbook as:

Is likely to adversely affect - *the appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or beneficial (see definition of "is not likely to adversely affect"). In the event the overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, then the proposed action "is likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, an "is likely to adversely affect" determination should be made. An "is likely to adversely affect" determination requires the initiation of formal section 7 consultation.*

Is not likely to adversely affect - *the appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be*

able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur.

Generally, the informal consultation process is intended to:

- clarify whether and what listed, proposed, and candidate species or designated or proposed critical habitats may be in the action area;
- determine what effect the action may have on these species or critical habitats;
- explore ways to modify the action to reduce or remove adverse effects to the species or critical habitats;
- determine the need to enter into formal consultation for listed species or designated critical habitats, or conference for proposed species or proposed critical habitats; and
- explore the design of modification of an action to benefit the species.

In this case, the GOA pollock and Pacific cod fisheries have already been formally consulted on under section 7 at both the plan level (2000 BiOp) and at the project level (2001 BiOp and 2003 supplement). These consultations are described below in section I(B). Therefore, we must review the proposed action to determine if any of the above information would trigger re-initiation of formal section 7 consultation based upon the following guidelines:¹

- (a) the amount or extent of taking specified in the incidental take statement is exceeded;
- (b) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (c) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or**
- (d) a new species is listed or critical habitat designated that may be affected by the identified action

Under this informal consultation, the third trigger (c) above applies most directly to this situation. The objective is to determine whether the proposal would modify the action in a manner that would cause an effect to the Steller sea lions or their critical habitat that was not considered in previous biological opinion (e.g., 2000 BiOp, 2001 BiOp). The following table outlines the possible conclusions based on the probable effects of the action.

¹ Source: 50 CFR §402.16

Informal Consultation Conclusion	Subsequent Consultation Process
No effects not previously considered	Informal consultation ends with written concurrence, re-initiation not necessary
Effects not previously considered are insignificant or entirely beneficial	Informal consultation ends with written concurrence, re-initiation not necessary
Effects not previously considered may adversely affect listed species or their designated critical habitat	Re-initiation of formal consultation required

The informal consultation process provides an opportunity for NMFS to offer potential mitigating actions which might reduce the effects of the proposed action on listed species. However, in some cases, mitigating actions may not be possible. In these situations, formal section 7 consultation may be necessary, or the action agency has the option to abandon the proposal. We will provide guidance on the likely effects that the proposed action will have on Steller sea lions, provide mitigation options where appropriate, and outline which actions might move forward under informal consultation. Those actions resulting in adverse affects to Steller sea lions or their critical habitat would require formal consultation.

1.2 Listed species and critical habitat

The Steller sea lion (*Eumetopias jubatus*) is the only extant species of the genus *Eumetopias*, and is a member of the subfamily Otariinae, family Otariidae, superfamily Otarioidea, order Pinnipedia. The closest extant relatives of the Steller sea lion appear to be the other sea lion genera, including *Zalophus*, *Otaria*, *Neophoca*, and *Phocartos*, and the fur seals of the genera *Callorhinus* and *Arctocephalus*. Loughlin *et al.* (1987) provide a brief but informative summary of the fossil record for *Eumetopias*. Repenning (1976) suggests that a femur dated 3 to 4 million years old may have been from an ancient member of the *Eumetopias* genus, thereby indicating that the genus is at least that old. *Eumetopias jubatus* likely evolved in the North Pacific (Repenning 1976).

On November 26, 1990, the Steller sea lion was listed as threatened under the ESA (55 FR 40204), and on August 27, 1993 (58 FR 45269) critical habitat was designated based on observed movement patterns. In 1997 the Steller sea lion population was split into two separate stocks (western and eastern stocks) based on demographic and genetic dissimilarities (Bickham *et al.* 1996, Loughlin 1997)(62 FR 30772). Due to the continued decline, the status of the western stock was changed to endangered, while the status of the increasing eastern stock was left as threatened. Since 1977 the western population has continued to decline while the eastern population has maintained steady increases and may be considered for de-listing over the next few years if the positive trend continues. However, in 2002, the first increase in the non-pup western population was observed during the biennial range-wide counts.

The two listed populations and their critical habitat is as follows:

Western Population of Steller Sea Lion (*Eumetopias jubatus*; listed as threatened on November 26, 1990 [55 FR 40204]; listed as endangered on May 5, 1997 [62 FR 30772]; critical habitat designated on August 27, 1993 [58 FR 45269])

Eastern Population of Steller Sea Lion (*Eumetopias jubatus*; listed as threatened on November 26, 1990 [55 FR 40204]; critical habitat designated on August 27, 1993 [58 FR 45269])

Further information on the background of the species and their critical habitat are referred to the 2000 BiOp and the 2001 BiOp and its Supplement. The latest information on the stock status can be found in the Supplement at Table I-1. The most recent non-pup count in 2002 yielded 19,340 animals in the western DPS and 9,951 in southeast Alaska (a subset of the eastern DPS of Steller sea lion).

1.3 Background on Previous Section 7 Consultations

Numerous informal and formal consultations under the ESA have been completed on the GOA pollock and Pacific cod fisheries since the Steller sea lion was listed. The most pertinent consultations are the November 30, 2000 Biological Opinion (2000 BiOp) evaluating the Fishery Management Plans and their implementing regulations for the BSAI and GOA fisheries, and the October 19, 2001 Biological Opinion (2001 BiOp) and its June, 2003 supplement (Supplement) on the BSAI and GOA Pacific cod, pollock, and Atka mackerel fisheries specifically at the project level. Below is a description of each biological opinion and the applicability to this proposed action considered in this document.

1.3.1 November 30, 2000 Biological Opinion (FMP biological opinion) on authorization of groundfish fisheries in the BSAI under the Fishery Management Plan (FMP) for the BSAI Groundfish, and the authorization of groundfish fisheries in the GOA under the FMP for Groundfish of the GOA.

The opinion was comprehensive in scope and considered the fisheries and the overall management framework established by the respective FMPs to determine whether that framework contained necessary measures to ensure the protection of listed species and their critical habitat. The opinion determined that the BSAI or GOA groundfish fisheries, as implemented under the respective FMPs, jeopardized the continued existence of the western population of Steller sea lion and adversely modified their critical habitat. The opinion provided a Reasonable and Prudent Alternative (RPA) which was partially implemented in 2001. Full implementation of the RPA was scheduled for 2002; however, the Council provided a substitute action intended to sufficiently remove jeopardy and adverse modification in a manner similar to the RPA, but with less economic impacts. That action was considered in the 2001 BiOp described below.

The 2000 BiOp remains as the agency's consultation at the plan level for the BSAI and GOA groundfish fisheries. Therefore, subsequent actions must be consistent with the conservation requirements described in that opinion. However, the specific conservation measures as described in the RPA were substituted for the action considered in the 2001 BiOp described below.

1.3.2 October 19, 2001 Biological Opinion and June, 2003 Supplement on the authorization of pollock, Pacific cod, and Atka mackerel fisheries in the BSAI under the Fishery Management Plan (FMP) for Groundfish of the BSAI, and in the GOA under the FMP for Groundfish of the GOA.

The opinion was focused at the project level on the pollock, Pacific cod, and Atka mackerel fisheries. Consultation was initiated based on the Council recommending an alternative suite of management measures intending to be substituted for the measures contained within the RPA of the 2000 BiOp. The proposed conservation measures were determined to avoid jeopardy and adverse modification to critical habitat for both the western and eastern distinct population segments of Steller sea lion. Therefore, the new measures recommended by the Council and adopted by NOAA Fisheries, although not specifically required by an RPA, are in effect necessary as they replaced the specific measures in the RPA from the

2000 BiOp.

Greenpeace, American Oceans Campaign, and the Sierra Club challenged the 2001 BiOp. On December 18, 2002, U.S. District Court for the Western District of Washington Judge Zilly granted motion for summary judgment on Greenpeace, American Oceans Campaign, and Sierra Club v. NMFS et al., No. C98-492Z). The opinion was remanded to NMFS for further consideration of issues as required by the Court. On June 19, 2003 NMFS prepared a supplement to the 2001 BiOp which further evaluated the fisheries and their interactions with Steller sea lions and affirmed the determination that the pollock, Pacific cod, and Atka mackerel fisheries did not jeopardize the species or adversely modify their critical habitat. The supplement evaluated fishery catch data from both before and after implementation of the conservation measures, which provided a unique perspective for a consultation. The Supplement showed that some conservation components to the action worked quite well while others did not perform up to expectations (see Supplement, Table IV-1). Because fisheries are dynamic, biomass amounts change, fish swim, and the fleet is constantly adapting to changes in both the physical and economic environment, some of this is expected. Overall, the action was conservative enough to avoid jeopardy, while some elements certainly could be improved upon as described in the Supplement. However, changes were not required to avoid jeopardy or adverse modification.

1.4 Current Approach to Conservation

In 2001, the entire suite of groundfish fishery regulations intended to reduce interactions with Steller sea lions was modified based on new information on the at-sea distribution of Steller sea lions. The revised suite of regulations (outlined in NMFS 2001 and its Supplement) used the same types of measures employed in 1991-2000: establishment of zones in portions of critical habitat that excluded certain fisheries, and temporal/spatial allocations of catch to disperse fisheries and reduce the likelihood of localized depletion of prey. Regulations that excluded all trawl fisheries from areas around rookeries were replaced with regulations that excluded only the Atka mackerel, pollock and Pacific cod fisheries from zones of various sizes around rookeries and haulouts (individually based on gear type; varies by location). Spatial and temporal quota allocation schedules were set for Pacific cod fisheries for the first time, while Atka mackerel and pollock critical habitat catch limits were eased in exchange for other mitigation measures (e.g., platoons and cooperative management).

1.4.1 Implementation of conservation measures

In the court-ordered remand of the 2001 BiOp (Supplement), the distribution of groundfish fisheries in 1999 was compared with 2002. These years were chosen because the 2000 BiOp had found that the 1999 groundfish fisheries for Pacific cod, pollock, and Atka mackerel (as a whole) jeopardized the continued existence of Steller sea lions and adversely modified their critical habitat. Fisheries in 2002 were the first conducted under the modified suite of measures designed in 2001 to avoid jeopardy. Data used in this comparison included catches and harvest rate indices (catch/biomass ratios) of the three species in various sections of critical habitat. In addition, the revised spatial and temporal allocation schemes for each fishery was reviewed.

The comparison of fishery distributions in 1999 and 2002 in the Supplement revealed that the conservation measures, for the most part, met their objectives for the pollock fisheries in the Gulf of Alaska. Less successful was the suite of modifications made to the fixed gear and trawl Pacific cod fisheries in the Gulf of Alaska. Table IV-1 of the Supplement summarizes the data described above, and color codes this based on a qualitative assessment. The main concerns were the low area closure

amounts for fixed gear cod fisheries close to shore (0-10 nm), and the lack of change to the seasonal compression in the Pacific cod fisheries overall, but especially in the trawl Pacific cod fishery.

1.4.2 Guidelines for protection

As NMFS has obtained new information on the ecology of Steller sea lions and the environment upon which they rely for survival we have modified our approach accordingly. Changes to our approach are intended to be responsive to the new information, provide less burdensome regulations for the groundfish fishery, and facilitate the recovery of Steller sea lions. Over the last 5 years, based in part to the increase in funding for Steller sea lion research, new information has become available related to the causes of the current decline and its possible relationship to commercial fisheries. The most notable change is to the perspective on which areas around a rookery or haulout are most important. An expanded discussion of these factors can be found in the Supplement in section IV(B). In general NMFS' guidelines are the following:

Closure areas:

- 0-3 nm closed 100%
- 3-10 nm closed 75%
- 10-20 nm closed 50%
- critical habitat overall, including foraging areas closed 50%

Temporal dispersion:

- season apportionment of catch at 50/50

Catch limitations (localized depletion):

- critical habitat catch limits (or other) for those fisheries known to be concentrated

NMFS' hierarchy of concern by gear type is trawl, fixed gears (pot and hook-&-line), and then jig gear (see Supplement section IV(B)). For this proposed action, only trawl and pot gears are affected by the changes in closure areas, hook-&-line gear is also affected by the proposed Pacific cod seasonal changes.

Numerous published and unpublished reports over the last few years have added new information, as well as reviews of previous information, to the debate over the decline of Steller sea lions. Most notably the National Research Council report (NRC, 2003) questioned whether nutritional stress was continuing to play a role in the population decline of the western DPS of Steller sea lion. The NRC hypothesized that killer whale predation might be more important than previously considered, but they could not rule out nutritional stress as a viable component of the current decline. These issues were discussed at the June 24-26 meeting of the SSLMC. However, new information available to the SSLMC that was not available to the NRC committee included revised estimates of killer whale predation in the western DPS which did not correlate well with the killer whale hypothesis being the sole factor in the current continued decline. However, the killer whale debate rages on as new papers by Springer et. al. (2003) and rebukes by Wade et. al. (2003) continue. Other reports such as Holmes and York (2003) indicate that chronic nutritional stress may have resulted in decreased fecundity rates in the 1990s. A vast amount of unpublished data are available due to the influx of research funding over the last three years as reported in the abstracts from the 15th Biennial Conference on the Biology of Marine Mammals which was held in North Carolina on December 14-19, 2003. Pollution and toxicity effects related to disease remains a viable factor in the decline. It is likely that multiple factors are influencing the population, possibly with varying effects by region and by time period. Given the vast area of the decline, it is

unlikely that any one factor is working alone, and that multiple synergistic factors are at play (2001 BiOp).

Nutritional stress is likely contributing factor to the current decline of the western DPS of Steller sea lion. Our understanding of the foraging requirements and habits of Steller sea lions indicates that pollock is a very important component and that access to those prey fields near rookeries and haulouts (0-10 nm) remains to be an important need. Additionally, a variety of readily available prey resources may be necessary for survival with some research indicating that diet diversity may be an indicator of survival. Winter remains as the time period that researchers feel is the most important especially for pups and juveniles that lack sophisticated diving ability and yet require large amounts of prey to get their needed caloric intake. For juveniles, access to a consistent prey resource may be very important due to both their energetic requirements as well as their inability to consume large amounts of prey at any one time. Changes in prey availability which reduces the predictability of that prey item or which changes the structure of the prey resource (e.g., school structure, depth, etc.) might compromise a juvenile, especially in the winter. This might also make them susceptible to killer whale predation if increased foraging times are required to obtain prey. Numerous energetic bottlenecks have been proposed, including the weaning period for pups, juvenile foraging in winter, and adult females lactating in winter. These time periods are not only energetically expensive for the animals, but they also occur during times in which prey may be less available to them in nearshore areas. Recent modeling efforts have shown numerous bottlenecks which are supported by field data, however, some laboratory experiments have yielded conflicting results.

Currently, NMFS considers food limitation to be a likely potential factor in the decline of Steller sea lions, and therefore important to the recovery of the species. However, NMFS recognizes the likelihood that killer whale predation is a contributing factor in the current decline and lack of recovery in the western DPS of Steller sea lions, among numerous other factors (e.g., disease, toxins, natural climatic change, etc.). The purpose of this consultation is to determine if the changes in the fishery are likely to alter prey availability for Steller sea lions and adversely affect their foraging success.

2 PROPOSED ACTION

This action proposes to make changes to the Pacific cod and pollock fisheries in the GOA. A detailed description of the current fishing regulations can be found in the 2001 BiOp and Supplement. Again, our purpose here is to determine whether the proposed changes are significant such that formal consultation would be reinitiated.

2.1 Changes to Fisheries

A detailed description of the changes to the action can be found in the Council's proposal (NPFMC, 2003). In general, the action consists of 8 area closure changes for the Pacific cod and pollock fisheries in the GOA, a seasonal allocation change to the Pacific cod fishery, and changes to the rollover provisions for the pollock fishery. The following are the specific proposals as presented by the Council in their request for consultation. Some proposals are relatively vague and require further explanation and our interpretation. Maps of closure areas can be found in Figures 1-3, and a listing of the specific area changes is found in Table 1.

2.1.1 Open the closed area around the Marmot Island rookery to 10 nm for pollock trawling during the A and B seasons. All other fishing restrictions around Marmot Island remain as

is. Close the area around the haulout on Sea Otter Island to 20 nm to pollock trawling during the A and B seasons.

Gulf pollock fishermen have traditionally fished around Marmot Island. Currently the area around Marmot Island is closed to the pollock trawl fishery to within 15 nm of the island's rookery (Figure 1, Table 1). This proposal seeks to provide pollock trawl fishing opportunities to within 10 nm of the Marmot rookery. As a mitigation measure, the Council's proposal would close an extended area around Sea Otter Island (haulout) to 20 nm (currently closed to 10 nm). The opening at Marmot and closure at Sea Otter would occur only during the pollock A and B seasons.

2.1.2 Open the closed area around the Puale Bay haulout to 3 nm for pollock trawl fishing from January 20 to June 10. All other fishing restrictions around Puale Bay remain as is. Close the area around the Cape Douglas/Shaw Island haulout to 20 nm to pollock during the same time period.

The Puale Bay sea lion haulout is currently closed to the pollock trawl fishery within 10 nm (Figure 2, Table 1). This proposal seeks to allow pollock trawl fishing to within 3 nm of the Puale Bay haulout. As a mitigation measure the proposal includes closing the Cape Douglas/Shaw Island haulout to 20 nm (currently closed to 10 nm). These changes would only apply to the January 20 to June 10 time period.

2.1.3 Open the closed area around the Kak Island haulout to 3 nm for Pacific cod pot fishing. All other fishing restrictions around Kak Island would remain as is. Close the area around the Kilokak Rocks location to 10 nm to Pacific cod pot fishing.

This proposal would open an area around the Kak Island haulout to Pacific cod pot fishing to 3 nm, where there is currently a 20 nm closure (Figure 2, Table 1). As a mitigation measure, a closure to Pacific cod pot fishing is proposed to 10 nm offshore from the Kilokak Rocks location. However, Kilokak rocks is not a listed sea lion haulout and is therefore not critical habitat for Steller sea lions. Further discussion of this site will be given in section 3.0 (Effects of the Action).

2.1.4 Open an area around the Castle Rock haulout to the shoreline for Pacific cod pot fishing. Open an area near Castle Rock from 3 to 10 nm to cod trawl fishing by reducing the closure area around Atkins Island (which Overlaps Castle Rock).

Castle Rock is currently closed to any Pacific cod fishery within 3 nm (Figure 3, Table 1). This proposal would remove the closure zone for the GOA Pacific cod pot fishery and therefore allow fishing to the shoreline. The proposal also would remove some restrictions for Pacific cod trawl fishing around Castle Rock beyond 3 nm by reducing the closure area at Atkins Island. Because these sites overlap, the Atkins closure zone (20 nm) currently restricts fishing at Castle Rock. Although several methods were generally proposed to accomplish the change, none were specific. Therefore, NMFS will consider that the action would reduce the current 20 nm closure at Atkins Island to 10 nm. This at least will be the starting point for conversation, as numerous possibilities are available for changing the closure area.

2.1.5 Two options to amend regulations implementing the Pacific cod seasonal TAC apportionments in the GOA.

This proposal has two options:

1. Change the season dates and apportion the annual Pacific cod TAC in the GOA so that 60 % of the TAC can be fished in the A season (January 1 through March 31), 20 % in the B season (April 1 through August 31), and 20 % in the C season (September 1 through November 1 for trawl gear, September 1 through December 31 for fixed gear). This recognizes that in the B season, Pacific cod TAC would be first apportioned to non-Pacific cod directed fishery bycatch needs, with the remainder of the B season TAC, if any, apportioned to a B season directed Pacific cod fishery. Or,
2. Retain the current season dates and apportionment but change regulations so that 60% of the Pacific cod TAC in the GOA (both directed cod fisheries and cod bycatch in other fisheries) is taken in the A Season (January 1 through June 10). Between-season harvest of cod TAC (bycatch in other fisheries) would be subtracted from the B season TAC.

As was shown in the supplement to the 2001 BiOp, implementation of the current regulations resulted in high total catch amounts of Pacific cod in the first half of the year. However, the Sustainable Fisheries Division has determined that they are able to meet the requirements of the 2001 BiOp and option 2 above without any regulatory changes. In other words, a slightly different implementation of the regulations, which will be used for the 2004 fishery will in effect implement option 2. Therefore, we focus our analysis on the implementation of option 1.

Option 1 would change the Pacific cod fishing seasons and the TAC apportionment by season as follows:

- A season, 60%, January 1 through March 31;
- B season, 20%, April 1 through August 31; and
- C season, 20%, September 1 through October 31 (through December 31 for fixed gear).

The intent is that any incidental catch expected in any season would be deducted from the seasonal apportionment such that the total catch for that season would not exceed the seasonal apportionment.

Fishermen have noted that there has been an increase in the number of hook-and-line vessels fishing for Pacific cod in the Central Gulf because cod catch rates have been higher than in areas to the east, thereby attracting vessels. Also, Pacific cod prices have been higher in recent years, resulting in increased Pacific cod trawl fishing effort in the A season. Also the annual TAC for cod has decreased 43% for 2002 compared with quotas during 1995-1999; this has resulted in an increase in the percentage of cod quota used by other fisheries (incidental catch). These changes have created a number of allocative problems in the Pacific cod fishery resulting in less TAC available for harvest by fixed gear, especially for pot gear. Again, these changes are largely a result of the decrease in the Pacific cod TAC and not a result of Steller sea lion conservation measures, although those changes are certainly a part of the mix.

2.1.6 Remove the two-week stand-down period periods between the A and B seasons and between the C and D seasons in the GOA pollock trawl fishery by extending the season ending dates for the A and C seasons.

Regulations require fishermen to stop fishing for pollock for two weeks (a “stand-down”) between the A and B seasons, and between the C and D seasons. The stand-down was implemented during a time when pollock harvests were higher and daily catch rates were also much higher. The original intent was to insure that there would be four distinct seasons.

2.1.7 Change the method for rolling over underharvested pollock TAC in the Western/Central Regulatory Areas in the trawl fishery. These rollovers would be limited to 20% of the

seasonal apportionment by area such that no rollover would result in a seasonal catch by management area above 120% of the original apportionment. Further, if the rollover amount exceeds the 120% rule above, then TAC may be further rolled over into the remaining open areas in proportion to the projected pollock biomass in those areas (as estimated by the GOA Plan Team in the SAFE document).

Currently, the regulations which describe rollovers of underharvested pollock TAC in the GOA are confusing and contradictory. Because of this, the proposal is intended to clarify the rollover process, provide for maximum utilization of the TAC, and avoiding adverse impacts to Steller sea lions. In essence, rollovers will be permitted as long as they don't exceed an amount equal to 20% of that seasonal apportionment for that specific management area.

Current regulations state that the underharvest of pollock in the Gulf may be rolled over "provided that any revised seasonal apportionment does not exceed 30 % of the annual TAC apportionment for a GOA Regulatory Area". This language does not account for the use of biomass projections to establish seasonal apportionments by Regulatory Area, as intended by the Steller sea lion protection measures.

2.2 Description of the Fisheries

A detailed description of the GOA pollock and Pacific cod fisheries can be found in the 2001 BiOp and Supplement, and the EIS which accompanied that action (NMFS 2001). For 2003, the pollock and Pacific cod catch is described in Table 4 and Figure 6 (inside 10 nm). In 2003, the seasonal apportionment for Pacific cod was nearly a 60/40% split (Table 4). Pacific cod catch inside 0-10 nm peaked in January and February with a smaller fishery in September. Pacific cod catch in critical habitat was 43% of the total catch, with 23% of the total catch inside 0-10 nm. Pollock catch inside 0-10 nm was low in the first half of the year with a peak in September of 5,000 mt, with an overall 59/41% split throughout the year (Table 4). Pollock catch in critical habitat was 80% of the total catch, with only 18% of the total catch inside 0-10 nm.

2.3 Status of the Fish Species/Steller Sea Lion Prey

The status of the GOA pollock and Pacific cod stocks are assessed on an annual basis in the Stock Assessment and Fishery Evaluation reports (SAFE) by NMFS and the Council. For the pollock stock, total biomass has been in decline since the high point in the early 1980s and is currently about 20-30% of that historic value (Dorn et. al., 2003; their Figure 26). For 2004, the more conservative estimate of spawning biomass is 165,580 mt and is at 27% of the theoretical unfished spawning biomass amount. This stock has been a difficult stock to manage, perhaps due to changing oceanic conditions in the GOA. Unlike BSAI pollock which has remained at high levels since the 1979 regime shift, GOA pollock seems to have entered a time period of decline and poor recruitment indicating that possibly the regime shift was not as strong or does not apply to GOA pollock. In fact, the highest recruitment years seen for this stock were before the regime shift took place (Dorn et al. 2003; Figure 26). Poor recruitment in the 1990s has led to a stock with very few older age classes of fish, combined with recent observations of a delayed maturity schedule, fishery pressure may now be very high on a single incoming 1999 year class which is only partially mature (Dorn et al. 2003; Figure 4). Current female spawning biomass is the lowest it has been since 1970.

3 POSSIBLE IMPACTS TO LISTED SPECIES

The proposed changes to the conservation measures are in roughly two categories; those that make changes to closure areas, and those that change the seasonal apportionments of Pacific cod and pollock. Therefore, we will discuss the proposed action under these two categories. We will also discuss the proposed action both as individual components and cumulatively.

3.1 Changes to Closure Areas

The components of the proposed action which make changes to the closure areas are described in sections 2.1 to 2.4 of this document. In these actions, three fisheries are affected: 1) trawl pollock, 2) trawl Pacific cod, and 3) pot Pacific cod. Table 2 describes the overall area affected for each fishery. For the trawl pollock fishery, the overall closure area in critical habitat is increased by 1.3% by the proposed action, while the area closed from 3-10 nm decreased by 2.0%. For trawl Pacific cod, the overall closure area in critical habitat is decreased by 2.2%, which was a reduction of 4.8% in the closure zone from 10-20 nm. For pot Pacific cod, the overall closure area in critical habitat is decreased by 3.9%, which resulted in a 0.6% reduction in 0-3 nm and a 0.2% increase in 3-10 nm. In sum, the suite of openings and closures appear to be relatively minor resulting in single digit percentage changes.

To understand the impacts to the sea lion population and its critical habitat we need to take a closer look at the changes to each individual area. This is important because not all areas of the ocean are equally important to Steller sea lions. Areas around large rookeries are likely to be much more important to Steller sea lions than occasionally used haulouts. In most cases, the SSLMC made proposals with the intent to have no net loss in closure area for Steller sea lions. However, as expressed by the Council's SSC from their October meeting minutes, "a point of concern is the concept that opening waters near a haulout in exchange for additional closures more distant from another haulout provides equivalent protection for SSLs. It is probable (based on telemetry data) that areas closer to a haulout or rookery are more important for SSL foraging than more distant areas as in proposal 1-B. Other factors that should be considered are the numbers of SSLs at the sites considered and their seasonal use patterns. The Castle Rock proposal reduces SSL protection with no corresponding protection and does not appear to meet the "no net loss" standard."

Although a "no net loss" approach was taken for the development of the proposal, we will not be applying that same standard for this consultation. Our evaluation whether formal consultation should be reinitiated will be made on our assessment of the likely effects of the total package, pointing out specific elements that are of concern. We will therefore examine each sea lion site, pointing out the population counts, changes to the closure area, relationship to sea lion foraging needs, and any other specific pertinent information important to that site or action. Given that the overall changes to the total area closed by any of these actions appears to be small (Table 2), part of our analysis will be to determine if there are any special considerations which make the area unique, if it protects important prey species, or if it is likely to be important to the recovery of the population as a whole.

Issues we will address as appropriate for each site:

- number of animals likely to be affected
- importance of the site to the recovery of the population
- protection of important foraging areas or aggregations of prey
- type of fishery being opened (trawl or pot)
- mitigating factors, or additional mitigation which might be possible
- size of the fishery likely given the opening

3.1.1 Marmot Island (rookery; listed critical habitat)

The Marmot Island rookery (Figure 1) is located northeast of the City of Kodiak. It was at one time the largest rookery in the Gulf of Alaska (Table 3 and Figure 4). The highest summer non-pup count was in 1976 at 9,862 animals, and the lowest was in 2000 at 698 animals; a 90% reduction in 24 years. The latest summer count in 2002 yielded 894 non-pups, with a decline rate of 49% since 1990. Winter non-pup counts have ranged from 398 in 1993 to 135 in 1999 (Table 3). Winter counts have been limited and sporadic. Pup counts peaked in the late 1970's at nearly 7,000 pups and have declined to about 500 pups since 2000 (Figure 4).

The proposed action (see section 2.1) would reduce the closure zone for the pollock fishery from 15 nm to 10 nm in the first half of the year (i.e., the A and B fishery seasons) for a reduction of 1,004 km² of closed area. Given that the B season fishery is concluded by the end of April (Table 4), it is likely that the number of animals at Marmot that might be affected is somewhere between the winter and summer counts (i.e., 135 and 894 respectively).

The Council's SSC commented that the recovery of Marmot Island rookery "will likely be important to overall population recovery," and we agree with that statement. The telemetry data supports a higher weighting of importance for the 0-10 nm zone, but the 10-20 nm zone may also be important for juvenile sea lions learning to forage (NMFS 2003). Given that Marmot Island is an important rookery to the population, the area between 10-20 nm is likely to be much more important for foraging females with pups than other haulout sites that the female would not be specifically linked to. Animals older than 10 months of age spend about 22% of their time in the 10-20 nm zone (NMFS 2003, Table II-7). For the animals in the region around Marmot Island, food habits data collected from 1990-1998 indicates that 63.9% of the scats contain pollock (Sinclair and Zeppelin, 2002). The next highest forage was arrowtooth flounder which was found in 35.3% of the scats.

In northeast Kodiak Island, there appear to be four important seasonal aggregations of pollock: Barnabas Trough, Chiniak Trough, the gully just south of Marmot, and an aggregation just southwest of Sugarloaf Island. The haulout at Barnabas is only closed to 3 nm, while the Chiniak haulout is closed out to 10 nm. This leaves much of the Barnabas and Chiniak gully's open for fishing. Some of the pollock aggregation near Marmot Island is fished, however most of it remains within the 15 nm closure zone and unavailable to the fleet. In the Supplement, Appendix V Figure 6 shows the intensity of catch of pollock in this area southwest of Marmot Island. It is likely that if Marmot Island is opened beyond 10 nm that substantial trawl fishing for pollock will occur there given the close proximity to Kodiak harbor and the consistent aggregation of prey which is found there.

Although we cannot quantitatively measure the effect on the population based on this reduction in the closure area, it is likely that this reduction in the protection of key foraging habitat would adversely affect Steller sea lions around Marmot Island. The area that would be open to fishing from this change consistently contains a relatively large aggregation of pollock which is likely to be important to the Marmot Island rookery. One mitigation factor already found in this proposal is that the opening would only occur during the winter when Marmot Island is not being used for pupping which occurs during the summer only.

3.1.2 Sea Otter Island (haulout; listed critical habitat)

The Sea Otter Island haulout (Figure 1) is located just northwest of Marmot Island near Kodiak. As a

haulout, it is of modest size (Table 3). The highest summer non-pup count was in 1976 at 541 animals, and the lowest was in 1992 at 0 animals which may have been an anomaly as recent counts have been on the order of 99 animals (2002); about a 75% reduction with a decline rate of 59% per year since 1990. Winter non-pup counts have ranged from 164 in 1993 to 95 in 1997 (Table 3).

The proposed action (see section 2.4) would increase the closure zone for the pollock fishery from 10 nm to 20 nm (Figure 1). The increase in area occurs on the east side near Marmot Island (255 km²) and on the west side (239 km²), in three discontinuous blocks which overlap largely with other closure areas (Table 1). The increase in closure area is fairly small and discontinuous, and all in the 10-20 nm distance from the haulout. However, it does result in maintaining some of the current closure around Marmot Island that would result in the 10-15 nm band (Figure 1).

The Council's SSC pointed out that Steller sea lions "use Marmot Island throughout the year and unlike many other rookeries it supports substantial numbers of juveniles. Substantially fewer animals use Sea Otter Island. The area beyond 10 n mi at Sea Otter Island is likely far less important for SSL foraging than the area . . . at Marmot Island. In addition, a substantial portion of the area proposed to be closed around Sea Otter Island is already closed due to overlapping closures around Marmot and Sugarloaf rookeries." We agree that this closure provides little additional protection for Steller sea lions. The most effective aspect of the closure is to reduce the amount of area closed around the northern area at Marmot Island from the change proposed there. Given that the additional closure area is fractionalized, and all within the 10-20 nm range, its conservation value may be limited.

3.1.3 Atkins Island (rookery; listed critical habitat)

The Atkins Island rookery (Figure 3) is located in the Shumagin Islands area. It was at one time a large rookery in the Gulf of Alaska (Table 3 and Figure 4). The highest summer non-pup count was in 1979 at 5,000 animals, and the lowest was in 1987 at 84 animals which may have been an anomaly. Recent counts have been on the order of 560 animals (2002); about a 90% reduction with a decline rate of 23% since 1990. The steepest decline seemed to occur in the late 1980s, with a much shallower decline since then. Winter non-pup counts have ranged from 931 in 1977 to 28 in 1997 (Table 3). Like Marmot Island, pup counts peaked in the late 1970's at nearly 4,500 pups and have declined to about 180 pups in 2003 (Figure 4).

The proposed action (see section 2.4) would reduce the closure zone for the trawl Pacific cod fishery from 20 nm to 10 nm for a reduction of 1,836 km² of closed area. Given that the fishery operates in the late winter/spring time period, it is likely that the number of animals at Atkins Island that might be affected is somewhere between the winter and summer counts (i.e., 46 and 560 respectively).

The change to the closure area was not specifically described in the proposal. Therefore, we used the change described here as a proxy. The intent is to open up fishing at the Castle Rock haulout (Figure 3). The effect of how this circle is drawn probably matters little to the probable effects to Steller sea lions; either having a complete reduction from 20 nm to 10 nm or a pie slice, due in part to the overlap with the closure at Chernabura Island (rookery). Also, it is likely that animals from Atkins Island travel along the shoreline to Castle Rock when foraging, as well as over to Chernabura Island. Therefore, the most important area to close would be along the shoreline and would conflict with the intent of the proposal to open that area for fishing. Looking at this from a different angle, additional closure area could be added east of Atkins Island out to 20 nm, but given that this is quite far from any land its conservation value would only marginally beneficial to Steller sea lions. In effect, the proposed reduction in the closure area

at Atkins Island reduces protection at Castle Rock and Atkins Island. Recent counts at Castle Rock have ranged between 38 and 155 with a high count of 600 in 1957.

It is likely that increasing a trawl fishery for Pacific cod around Castle Rock and Atkins Island would adversely affect foraging Steller sea lions. Because Atkins Island was once such an important rookery to the region there is value in protecting that area against potential competition with fisheries. Expected fishing effort is another unknown. The fleet has been able to catch all of the available quota in the GOA, so even if this area were opened, it might only see limited fishing effort. In other words, the closure of this area does not limit the fleet's ability to catch the quota, but might be economically beneficial to fishing here compared to other areas due to higher catch rates, proximity to ports, etc.

3.1.4 Puale Bay (haulout; listed critical habitat)

The Puale Bay haulout (Figure 1) is located in Shelikof Strait. At one point it was quite a large haulout, with 3,166 non-pups counted there in 1976 (Table 3). The lowest count was in 2000 at 84 animals; about a 97% reduction with a decline rate of 74% per year since 1990. Winter non-pup counts have ranged from 14,234 in 1977 to 40 in 1997 (Table 3). Given its location relative to the Shelikof aggregation of pollock it is not surprising that the number of animals here and the decline has tracked the same decline of the pollock stock (Dorn et al., 2003). The recovery of this haulout may be linked to the recovery of the pollock spawning aggregation in Shelikof. Recent surveys indicate that the Shelikof spawning aggregation is still in decline, and may cease to be the most important spawning aggregation in the GOA (Dorn et al., 2003).

The proposed action (see section 2.2) would decrease the closure zone for the pollock fishery from 10 nm to 3 nm during the A and B seasons (Figure 1 and Table 1). The change would result in a reduction of 771 km² in the 3-10 nm zone. Since 1990, usage seems to be pretty evenly split between winter and summer at around 100 animals.

Given the location of pollock biomass in Shelikof (Figure 5) it is hard to determine how well the 10 nm closure zone currently protects foraging habitat as the biomass is somewhat scattered throughout the strait. However, telemetry information around Kodiak Island inside Shelikof appears to indicate that Steller sea lions are staying closer to shore than on the east side of Kodiak Island (Supplement 2003, Figure II-2a).

The effect of opening fishing close to the Puale Bay haulout is difficult to estimate given the fact that this request was made primarily from a safety issue. This area would provide a fishing refuge for the fleet in stormy weather. It may not be utilized during other times, but the fishery location data are not detailed enough to make any predictions on that scale.

3.1.5 Cape Douglas/Shaw Island (haulout; not listed critical habitat; designated as important site)

The Cape Douglas haulout (Figure 1) is located near the entrance to Cook Inlet. Counts at this site only began in the mid-1990s with a high of 248 animals in 1997 and a low of zero in both 1995 and 1998. All winter counts at this site have been zero, indicating that this site is likely an ephemeral summer site for Steller sea lions targeting seasonally available prey. No historical count data are available after 1995.

The proposed action (see section 2.2) would increase the closure zone for the pollock fishery from 10 nm

to 20 nm during the A and B seasons (Figure 1 and Table 1). The change would result in an increase of 2,328 km² in the 10-20 nm zone. Given the ephemeral usage at this site which occurs mostly in the summer, additional protection measures for the pollock fishery are unlikely to have a substantial effect on the population. Additionally, substantial aggregations of pollock are not likely to occur in this area, and based on the ephemeral nature of the rookery it is suggestive of foraging for other prey types. The nearest known aggregation of pollock is near Sugarloaf Island.

3.1.6 Kak Island (haulout; not listed critical habitat; designated as important site)

The Kak Island haulout (Figure 2) is located just southeast of the village of Chignik. Counts at this site only began in 1990 with a high of 236 animals in 1998 and a low of 70 in 2000. Winter counts at this site have been around 51-73 animals. No historical count data are available after 1990. Generally, this non-critical habitat site appears to be stable in the 1990s with the two lowest counts occurring during the last two years of the survey.

The proposed action (see section 2.3) would decrease the closure zone for the Pacific cod pot fishery from 20 nm to 3 nm (Figure 2 and Table 1). The change would result in a decrease of 2,120 km² overall, 634 km² in 3-10 nm zone and 1,486 km² in the 10-20 nm zone. Pot Pacific cod currently is closed to only 27% of critical habitat, of that 32% of the 0-10 nm zone is closed (Supplement, Table I-11). Generally, the only area of the GOA with substantial Pacific cod pot closures is in the Chignik area with 5 sites with 20 nm closures. This change to 3 nm for Kak Island would be within an area with substantial area closed for foraging Steller sea lions. Additionally, the 20 nm closure at Sutwik Island overlaps substantially with the Kak Island area such that only the western zone around Kak Island would be available for fishing.

3.1.7 Kilokak Rocks (haulout; not listed critical habitat; not previously designated as an important site)

Kilokak Rocks (Figure 2) is located east of the village of Chignik near Shelikof Strait. Kilokak Rocks is neither critical habitat nor an important site identified in previous biological opinions. Counts at this site have been conducted since 1994, with a high of 167 animals in 1994 and a low of 67 in 2000. Winter counts at this site have been around 50-86 animals. No historical count data are available after 1994. The data are too limited to determine whether there is any population trend at this site. However, the data does seem to indicate that it is used year-round to some extent by limited numbers of animals.

The proposed action (see section 2.3) would implement a closure zone for the Pacific cod pot fishery from 0 to 10 nm (Figure 2 and Table 1). The change would result in an increase in protected area of 734 km² overall. However, as noted above, this is not critical habitat area. During the biennial population surveys NMFS counts animals at hundreds of locations, generally haulouts, that are not listed as critical habitat. Often these sites contain only a few animals, are ephemeral, or are frequently abandoned. During the consultation resulting in the 1998 Biological Opinion on the pollock fishery, NMFS identified 19 additional sites in the BSAI and GOA that met usage criteria that indicated that they were important sites and also important to the recovery of the species. NMFS has used this as a guideline in crafting protection measure up until now. The proposed closure around this site, which undoubtedly is used by Steller sea lions, may not result in significant benefit to the Steller sea lion population.

Our recommendation would be to choose another site to close that was either a listed critical habitat site or designated as one of the 19 additional sites (see the 2001 BiOp for further discussion of the 19 sites).

3.1.8 Castle Rock (haulout; listed critical habitat)

The Castle Rock haulout (Figure 3) is located in the Shumagin Islands area. The first population count was in 1957 with 600 non-pups. The lowest count was in 1985 at 12 animals, which may be indicative of an early decline for this site, with a steep reduction in the late 1970s and early 1980s. Since 1988 the site has been relatively stable with anywhere between 56-155 non-pups counted. Winter non-pup counts have ranged from 613 in 1977 to 0 in 1997 (Table 3).

The proposed action (see section 2.4) would reduce the closure zone for the Pacific cod pot fishery from 3 to 0 nm (Figure 2 and Table 1). The change would result in a decrease in protected area of 94 km² in the 0-3 nm zone. Currently, 58% of the 0-3 nm zone is closed to this fishery. It is likely that the Castle Rock haulout is related to the nearby rookeries at Atkins Island and Chernabura Island, and that females with pups from these rookeries use this site as it is within a 20 nm distance from there. Opening this site all the way to shore could have impacts not just on the population sized estimated that use this site but also the rookery at Atkins Island. Given that Steller sea lions go on frequent foraging trips and generally have large areas over which they forage, the number of animals which may be impacted at any one site is likely to be higher than the count as that is just one snapshot in time. In other words, the animals counted there might only remain a few days to be followed by an entirely new group of animals coming from a variety of other areas as there is no site fidelity with regard to haulouts.

3.2 Changes to Seasonal Apportionments

NMFS approach to season apportionments and Steller sea lion conservation has generally been to distribute catch throughout the year and across areas in order to remove pulse fisheries might locally deplete prey. This is accomplished through increased management areas, critical habitat catch limits, seasonal apportionments, gear apportionments, PSC apportionments, etc. In other words, there are many factors which affect the timing and location of catch that are used for management purposes. NMFS first approach was to apply rules equally across fisheries and areas, however, it was found that a variety of tools could be used to accomplish the same goals with less impact to the fishing industry.

For each of the seasonal apportionment changes below we will discuss the rationale for the status-quo approach and whether the change deviates from the intent of the action and whether mitigating actions could be taken.

3.2.1 Change the apportionment for Pacific cod TAC in the GOA

This change is described in section 2.5 with two options specified. The first option is the status-quo fishery with an apportionment of 60/40% in the A/B seasons. The second option apportions 60 % of the TAC in the A season (January 1 through March 31), 20 % in the B season (April 1 through August 31), and 20 % in the C season (September 1 through November 1 for trawl gear, September 1 through December 31 for fixed gear). Under this scenario, it is likely that the B season quota would be entirely set aside to allow for incidental catch needs.

The 60/40 apportionment came about as a result of the jeopardy determination from the 2000 BiOp based on the seasonally compressed nature of the Pacific cod fisheries, especially with trawl gear. The Supplement to the 2001 BiOp found that although a 60/40 allocation scheme was in place, that inseason management of the fishery has continued to allow roughly 70-79% of the TAC to be taken during the first half of the year (Supplement Figure III-5; Melanie Brown pers. comm.). NMFS anticipates that

inseason implementation of the regulations in 2004 will disperse harvests consistent with the sea lion conservation measures. In 2004 after the fishery is apportioned 60/40, incidental catch needs in the first half of the year will be deducted from the A season directed fishery such that the final catch amount for the first half of the year should be much closer to 60% than in the past few years. This is the first option, or status-quo. .

The Steller sea lion diet in the GOA contains about 5-11% Pacific cod in the summer and 31-36% Pacific cod in the winter in frequency of occurrence in scats (Sinclair and Zeppelin, 2002). Diet data for stomach samples has been similar, between 5-25% in the western DPS (Table 4.4 in 2000 BiOp). The biomass of Pacific cod in the GOA has been declining since about 1994. Age 3+ biomass has decreased by about 40% since 1994, while the 2004 biomass amount is expected to increase (about 7%).

3.2.2 Remove stand down provisions for GOA pollock

This change described in section 2.6 would remove the two-week stand-down period periods between the A and B seasons and between the C and D seasons in the GOA pollock trawl fishery by extending the season ending dates for the A and C seasons. The reason the request is being made is that the fleet in some areas is having a difficult time harvesting the pollock within the season dates currently in place. The original intent of stand-downs between seasons was to ensure that there would not be one fishing pulse with high catch rates. To do this the season start dates are spread out and a stand-down was put in place. However, the goal of having separate seasons is achieved with the season start dates as the fleet will not just sit in port waiting until the end of the first season to fish, they go at and begin fishing at the opening of the season given that it is an open fishery with no cooperative agreements. Therefore, this change to the regulations would be negligible and would not undermine the effect of the conservation measure.

3.2.3 Change the method for rolling over underharvested pollock TAC in the GOA

This change is described in section 2.7 and would establish a new roll over method for underharvested pollock in the Western/Central Regulatory Areas for the pollock trawl fishery. These rollovers would be limited to 20% of the seasonal apportionment by area such that no rollover would result in a seasonal catch by management area above 120% of the original apportionment for that specific area and season. Further, if the rollover amount exceeds the 120% rule above, then TAC may be further apportioned into the remaining open areas in proportion to the projected pollock biomass in those areas (as estimated by the GOA Plan Team in the SAFE document).

This adjustment clarifies somewhat confusing language in the regulations that actually allowed very large roll overs in some cases which was contrary to the original intent to limit the amount to 5% of the annual TAC by area, or in other words 20% of any seasonal quota (given that there are four seasons at 25% of the annual TAC, that equates to 20% of that seasonal fraction). This action would strengthen the conservation measures and ensure that any roll over of underharvested TAC would not result in disproportionate fishing effort in that area and season, based on the biomass available to be harvested.

4. DISCUSSION AND RECOMMENDATIONS

In section 3 above we intended to describe the relevant factors, effects, and issues regarding the changes to the action. In this section we will identify the components which are not likely to adversely affect Steller sea lions in ways not previously considered, those that would have effects, and those actions

which might result in substantial adverse effects. Where appropriate we have provided options for mitigation.

4.1 Closure Areas

The individual and cumulative effect of the proposed changes to the closure areas are described in section 3.1. As a whole NOAA Fisheries is concerned that the closure measures would adversely affect the western DPS of Steller sea lion in a manner which has not been previously considered. In large part this is due to the effects at the Marmot Island and Atkins Island rookeries. Because individual elements trigger this decision, the whole package does as well as there is not sufficient mitigating elements. We will therefore discuss the proposed closure area changes in groups as they were proposed, describing those elements which are of concern with suggestions for further mitigation.

4.1.1 Marmot Island/Sea Otter Island

NOAA Fisheries is concerned that the reduction in the closure zone at Marmot Island, which would open 1,004 km² potentially would result in adverse effects to the population and its critical habitat beyond those considered in the 2001 BiOp and its Supplement. Marmot Island is a key rookery in the GOA and is likely to be important to the recovery of the species. Increases in fishing close to Marmot Island could reduce the foraging success of those juveniles in the process of weaning throughout the late winter and spring. The Marmot Island closure protects a known aggregation of pollock, which likely is very important to Steller sea lions given the large reductions in known aggregations of pollock, specifically the Shelikof Strait aggregation. Perhaps the best representation of the importance of this area is found in Figures II-a in the Supplement which displays a relatively large amount of at-sea locations inside critical habitat between Marmot Island and the haulouts at Long Island and Cape Chiniak. Tables II-6 and II-7 describe the number of at-sea locations in the juvenile database. The inclusion of the Marmot Island change would require reinitiation of formal consultation on this fishery in order to assess whether the effects of opening this rookery would jeopardize the western DPS or adversely modify its critical habitat. It is likely that the prey resources around key rookeries is vital to the recovery of the western DPS.

4.1.2 Atkins Island

NOAA Fisheries is concerned that the reduction of the closure at Atkins Island, which would open 1,836 km² potentially would result in adverse effects to the population and its critical habitat beyond those considered in the 2001 BiOp and its Supplement. Atkins Island is a key rookery in the GOA and is likely to be important to the recovery of the species. Increases in Pacific cod trawl fishing close to Atkins Island and very close (up to 3 nm) of the Castle Rock haulout could reduce the foraging success of those juveniles in the process of weaning throughout the late winter and spring. As described by the SSLMC the Atkins Island closure protects a known aggregation of Pacific cod, which likely is important to Steller sea lions. Tables II-6 and II-7 of the Supplement describe the number of at-sea locations in the juvenile database. The inclusion of the Atkins Island change would require reinitiation of formal consultation in order to assess whether the effects of opening this rookery would jeopardize the western DPS of Steller sea lion or adversely modify its critical habitat. It is likely that the prey resources around key rookeries is vital to the recovery of the species. Additionally, the nearby rookery at Chernabura has also been declining and appeared to be in poor condition compared to other rookeries in the GOA (Tom Loughlin, pers. comm.).

4.1.3 Puale Bay/Cape Douglas

NOAA Fisheries is concerned that the reduction in the closure zone at Puale Bay haulout, which would open 771 km², with the mitigating action of closing Cape Douglas to 20 nm which would close 2,328 km² would not result in impacts to the western DPS beyond those considered in the 2001 BiOp and its Supplement. The value of the Puale Bay haulout to the western DPS of Steller sea lion is likely to have been diminished given the reduction in the pollock stock in the Shelikof Strait. Cape Douglas represents a new important haulout to Steller sea lions near the opening to Cook Inlet as described above.

4.1.4 Kak Island/Kilokak Rocks

NOAA Fisheries is concerned that the reduction in the closure zone at Kak Island haulout, which would open 2,120 km² would not result in impacts to the western DPS beyond those considered in the 2001 BiOp and its Supplement. However, the Kilokak Rocks closure does not meet these criteria as it is neither critical habitat nor an important site identified by NMFS (and meeting specific criteria described in the 1998 Biological Opinion on the pollock fisheries). NMFS does not endorse this closure approach which would not be based on previously determined biological needs by the species or represent listed critical habitat.

4.1.5 Castle Rock

NOAA Fisheries is concerned that the reduction in the closure area at the Castle Rock haulout, which would open 94 km² would not result in impacts to the western DPS beyond those considered in the 2001 BiOp and its Supplement. For this fishery, currently only 78% of the 0-3 nm zone is closed to the pot Pacific cod fishery. NMFS does not support opening the 0-3 nm zone as it represents the most important foraging area for Steller sea lions. However, one additional opening would have marginal additional effects on the western DPS. Mitigating factors in this decision is the type of fishery (pot) and the likelihood that the additional effort at this site will be limited and be caught by small vessels.

4.2 Seasonal Apportionments

Of the three apportionment changes (i.e., Pacific cod seasons, pollock roll-overs, and removal of stand downs), the Pacific cod seasonal apportionment is the only one requiring further discussion. A description of the proposal and its possible effects on Steller sea lions is described in section 3.2.

For the Pacific cod fishery, the proposed change would allow for 80% of the TAC to be taken by August; of which most of that would be taken before July 1. The practical result of this change would be a fishery concentrated in the first half of the year, which is very similar to the fishery that NMFS determined was likely to cause jeopardy and adverse modification (Supplement, Figure III-5). However, the SSLMC during its deliberations pointed out that the BSAI has the same apportionment structure currently in place that is in this proposal, which is true (see Supplement, Table IV-1). As stated above, the conservation measures are situational and vary depending upon circumstances rather than hard and fast rules and limitations that rigidly apply to all areas. The rigid approach to the RPA in the 2000 BiOp was rejected by the Council and NMFS as being too restrictive and not responsive to the various needs by fishing communities throughout the vast area in the BSAI and GOA.

Therefore, NMFS worked with the Council to develop the current conservation measures. The general goals of each measure are laid out in Table IV-1 of the Supplement. For example, the NMFS seasonal apportionment approach was a 50/50 split by season. For some fisheries, such as the EBS pollock fishery (40/60), these goals were met or exceeded. For other fisheries, such as the BSAI Pacific cod fishery

(60/20/20), the goal was not met. NMFS evaluated the entire suite of management measures as a whole, however, and determined that the suite would not jeopardize Steller sea lions nor adversely modify their critical habitat. One argument put forth is that since the BSAI has the 60/20/20 apportionment it should be fine for the GOA. However, that apportionment was reached through compromise with other mitigation measures to the package as a whole.

NMFS does not support further concentration of the GOA Pacific cod fisheries. Additionally, many of the concerns by the fishing industry are more related to gear conflicts and allocational issues which could be mitigated to a greater extent through other avenues with the Council (e.g., gear splits). The SSLMC sent a request to the Council requesting such relief. When seasonal apportionment for the Pacific cod fishery were first envisioned, the argument put forth by industry was that fish would likely go unharvested because of an inability to catch the TAC in the second half of the year. Yet, just the opposite situation has happened; catch rates (both directed and incidental) have been high resulting in compressed fisheries. A substantial component in the discussion is whether incidental catch amounts through the summer are a problem or not. From the sea lion perspective, these dispersed catch amounts are less likely to affect Steller sea lion foraging success. However, the dilemma facing the industry and the Council over who has the right to these TAC amounts is complex, and will likely intensify if Pacific cod TACs decline.

The Pacific cod seasonal apportionment is a very important component to the GOA conservation measures. Pacific cod is an important component in the diet of Steller sea lions in the winter time, and the closure zones for fixed gear fisheries are very limited in the GOA. The seasonal dispersion element provides an additional level of protection which we feel offset those limited closures. Implementation of fisheries compressed in the winter might require a closer look at the area closures currently in place in order to mitigate that change, if possible. At this time, we can conclude that the implementation of a 60/20/20 fishery would likely result in additional adverse effects which have not been considered, and would trigger reinitiation of formal consultation. The outcome of that consultation cannot be determined here without additional analysis, however, it is NMFS strategy to avoid concentrated fisheries especially during the winter time period when Pacific cod is important to foraging Steller sea lions.

4.3 Summary

Based on the discussion above, the following is a summary table of the proposals, indicating whether further mitigation is necessary or suggested to avoid adverse effects not previously considered. At this point, the proposed action could go forward with those components not likely to have adverse effects not previously considered. Those actions likely to adversely affect Steller sea lions or their critical habitat could be submitted to NOAA Fisheries for formal consultation. Currently, NOAA Fisheries cannot offer sufficient mitigation options for the opening at Marmot Island, Atkins Island, or the changes to the Pacific cod seasonal apportionment change which would lead to compression during the winter.

Proposal	Change to the Action	Further Mitigation	Possible Adverse Effects
Marmot Is./Sea Otter Is.	15 nm to 10 nm	none	yes
Atkins Is.	20 nm to 10 nm	none	yes
Puale Bay/Cape Douglas	10 nm to 3 nm/10 nm to 20 nm		no
Kak Is./Kilokak Rocks	20 nm to 3 nm/0 nm to 10 nm		no
Castle Rock	3 nm to 0 nm		no
Pacific cod 60/20/20	seasonal change	none	yes
Pacific cod 60/40	seasonal change		no
Pollock roll-overs	allow roll-overs as described		no
Pollock stand-downs	remove stand-downs		no

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Figure 1 Pollock closure areas in the GOA near Kodiak.

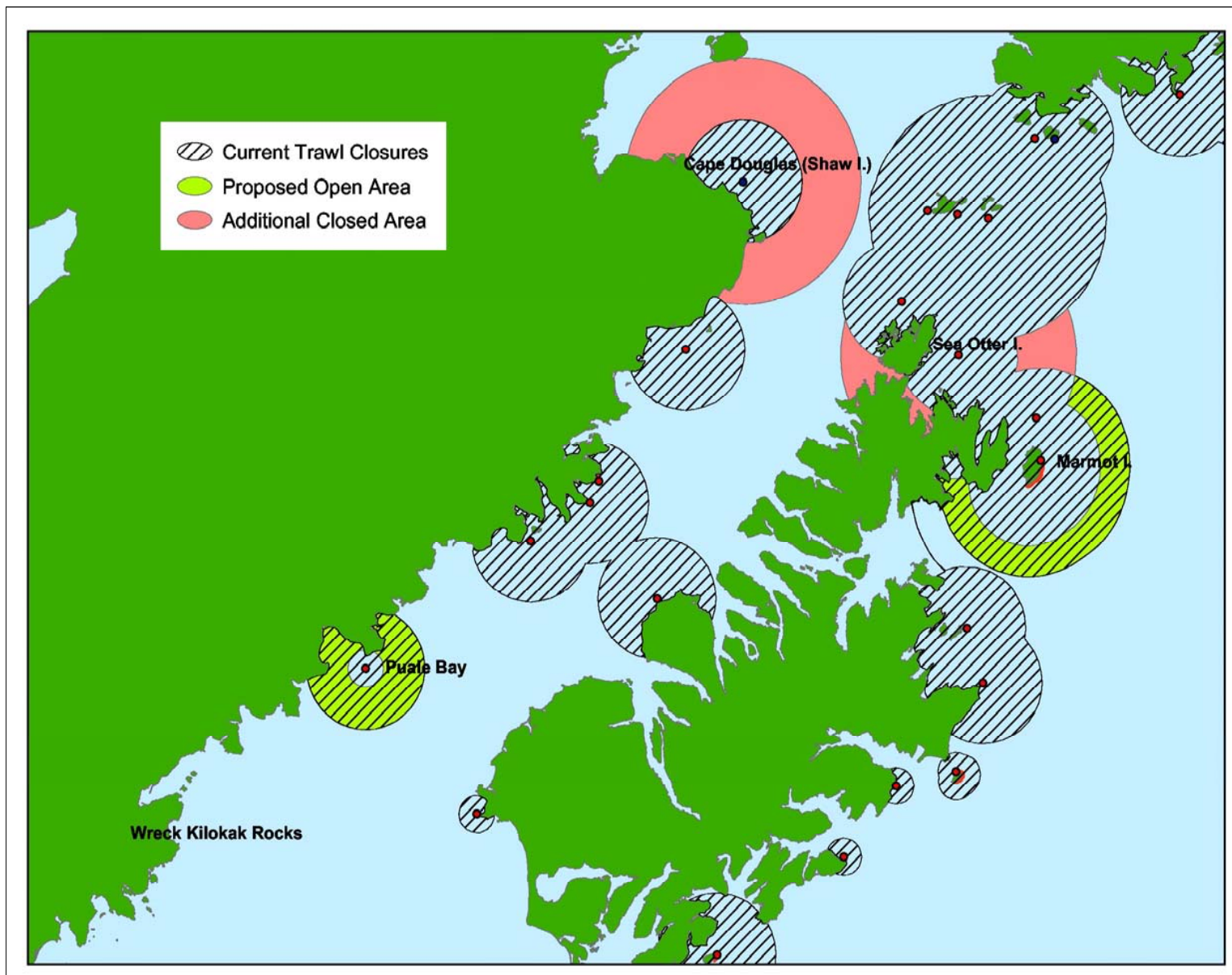


Figure 2 Pacific cod fixed gear closures near Chignik.

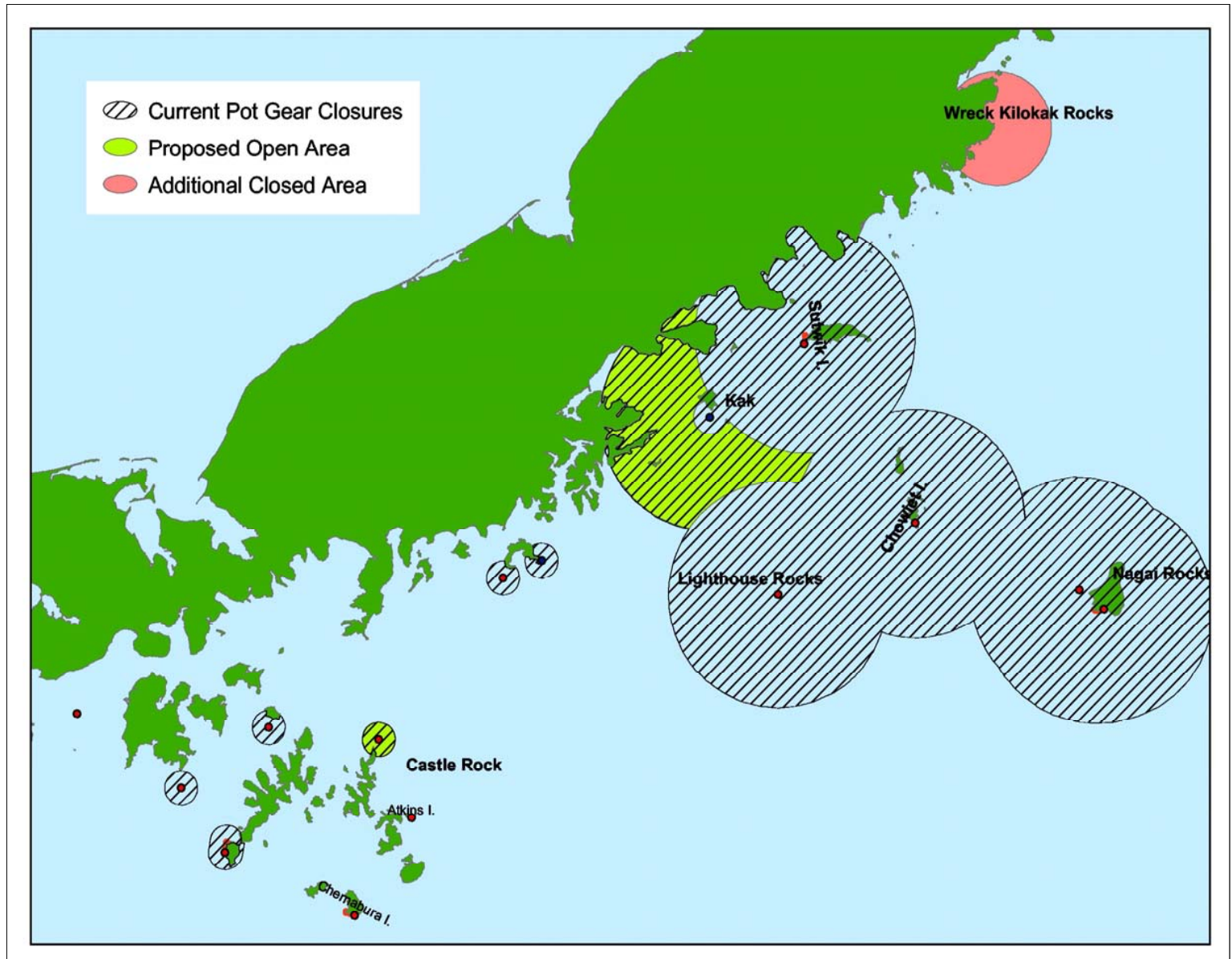


Figure 3 Pacific cod closure areas in the Shumagins.

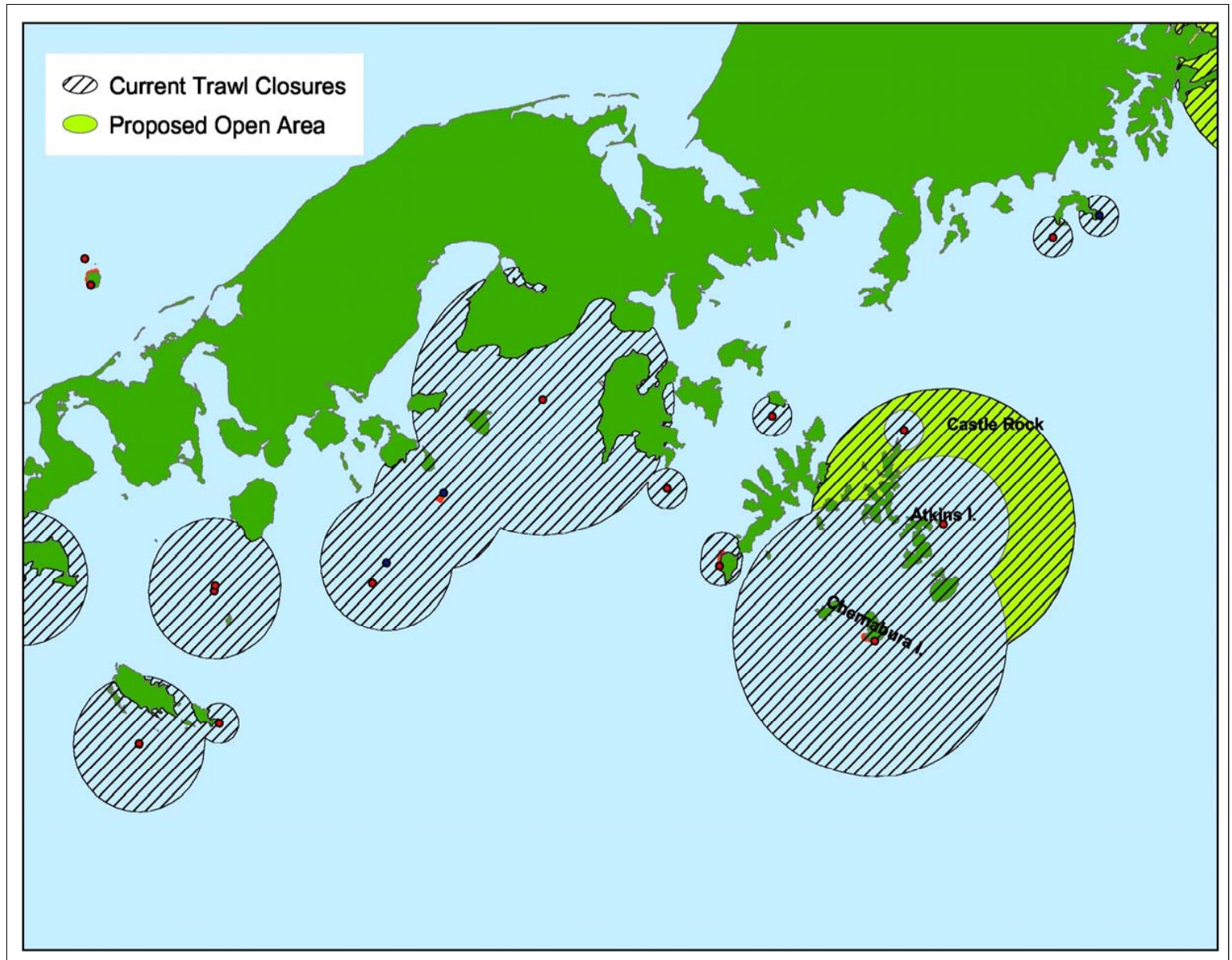
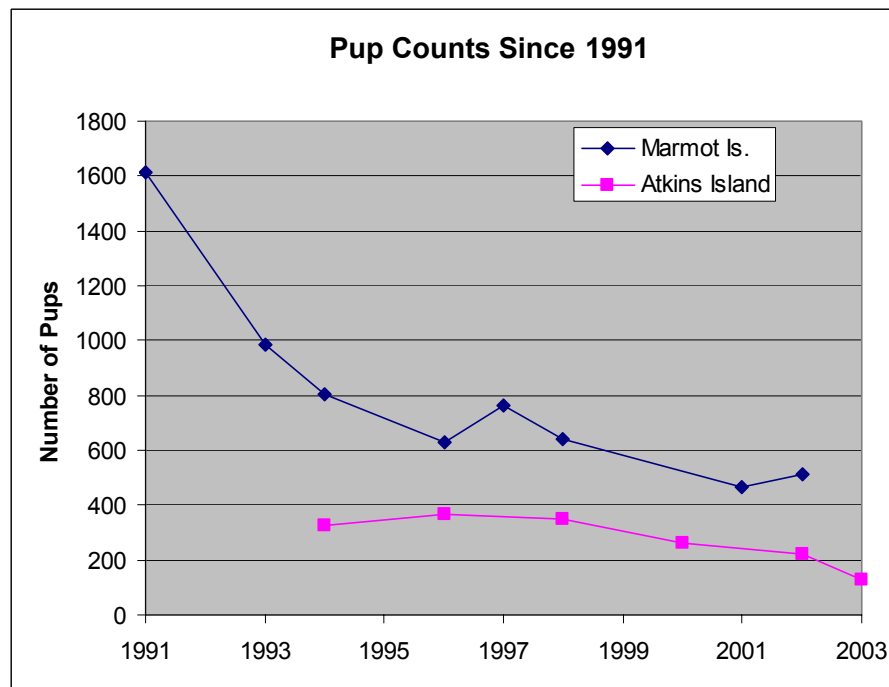
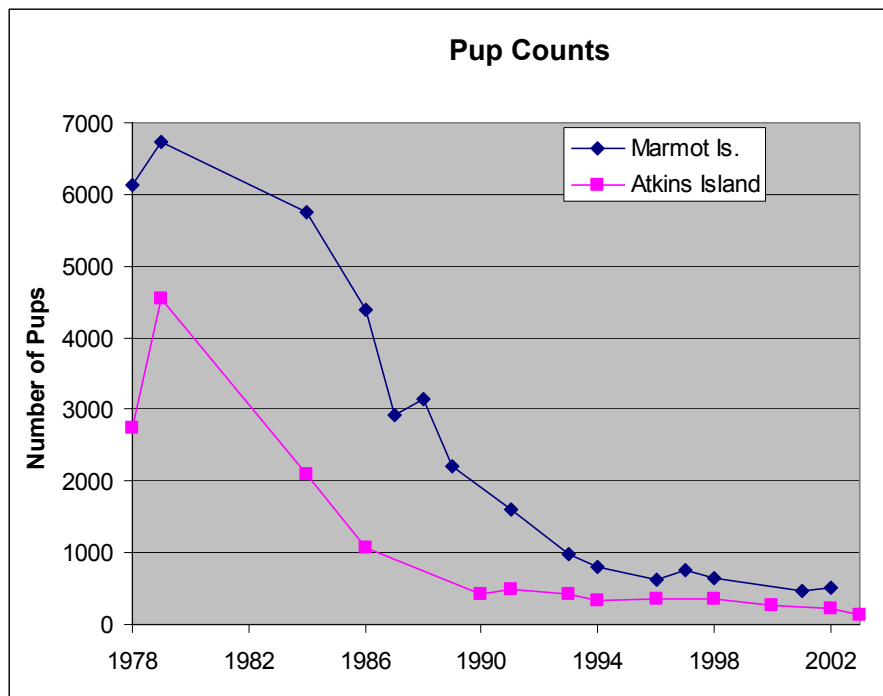


Figure 4 Pup counts from Marmot Island and Atkins Island in the GOA.



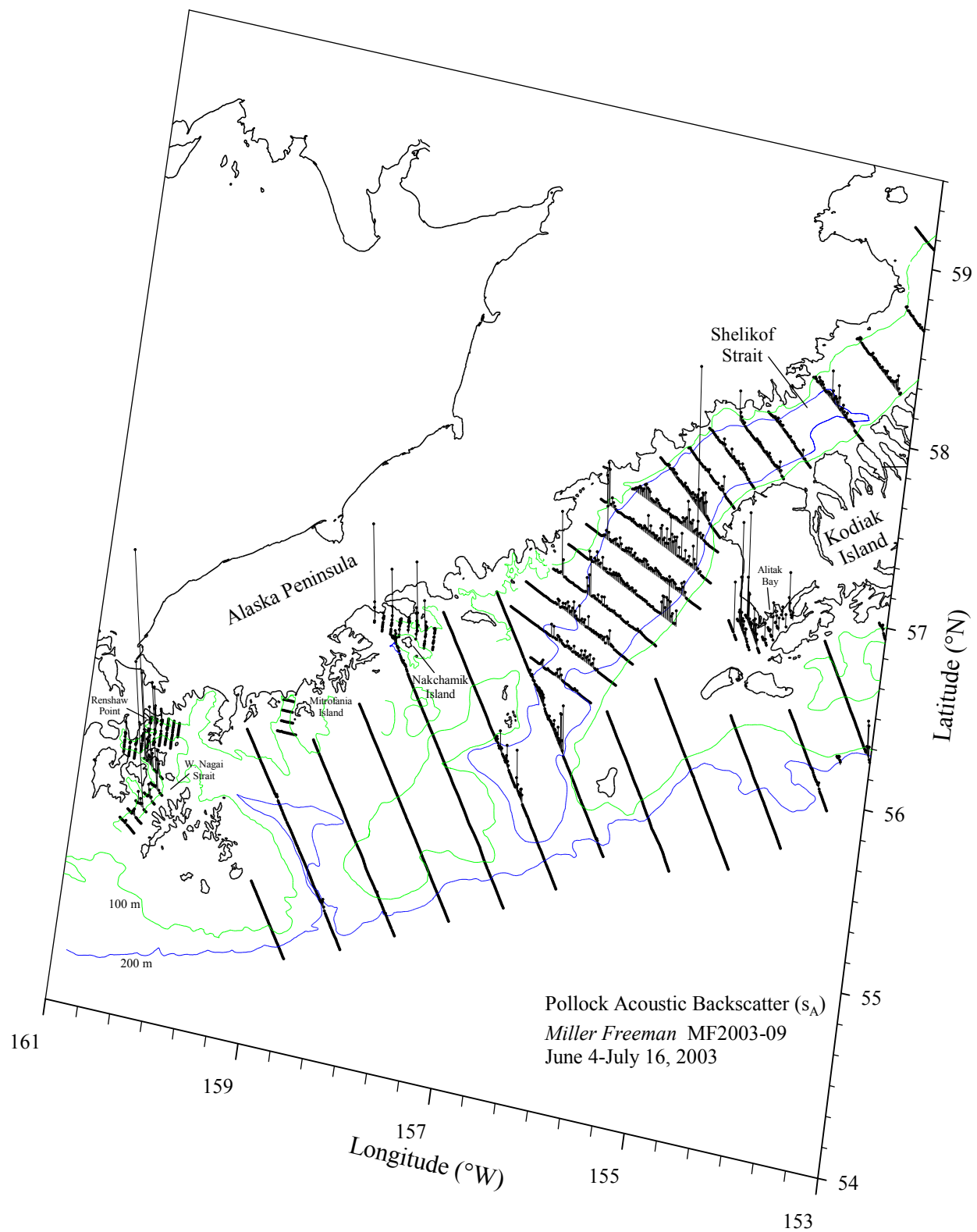


Figure 5. Relative backscattering (s_A) attributed primarily to pollock along tracklines during the June-July 2003 echo integration-trawl survey of the Gulf of Alaska (Dorn et al., 2003).

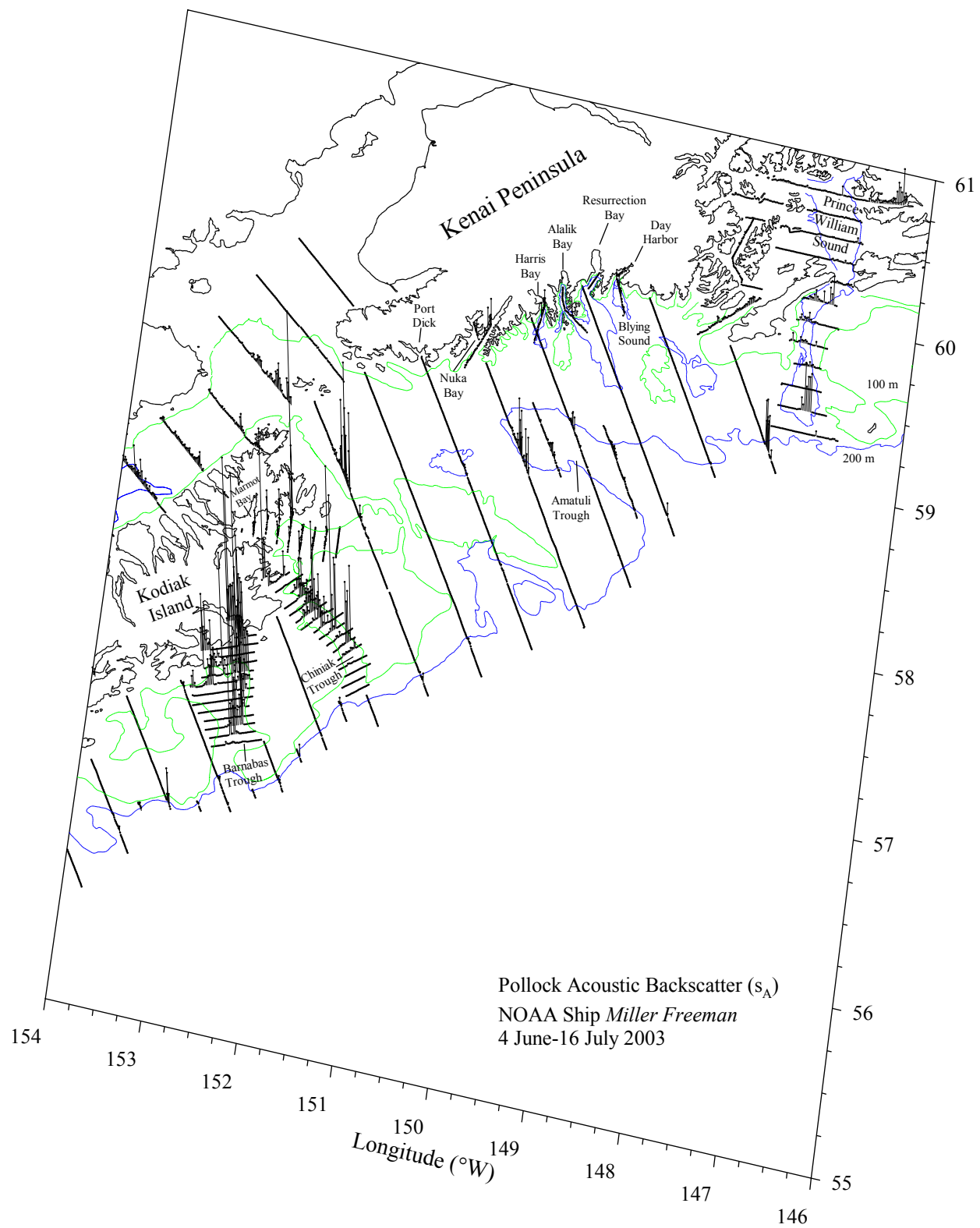


Figure 5. Continued.

Figure 6a Pacific cod catch in the GOA from 0-10 nm in 2003.

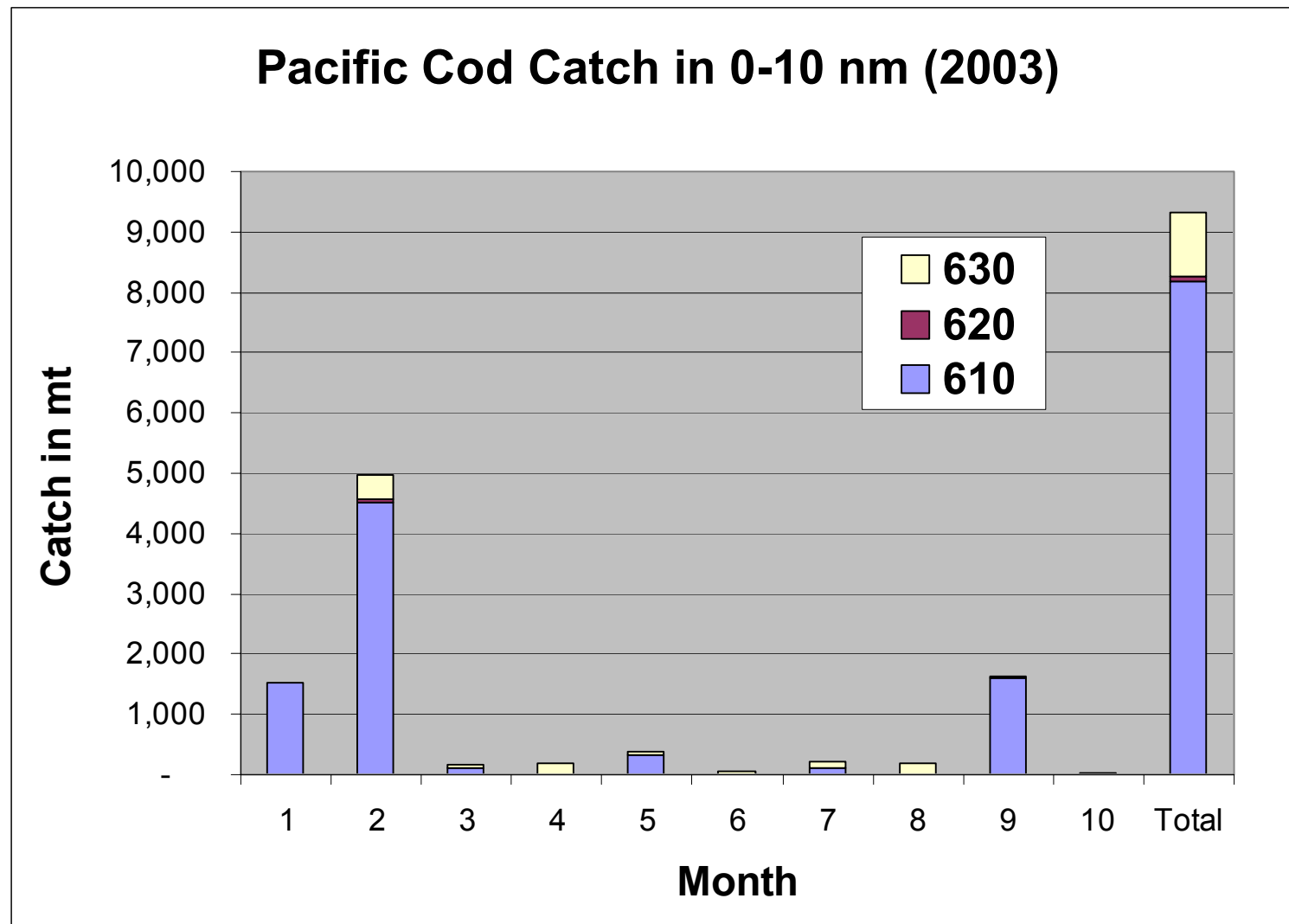


Figure 6b Pollock catch in the GOA from 0-10 nm in 2003.

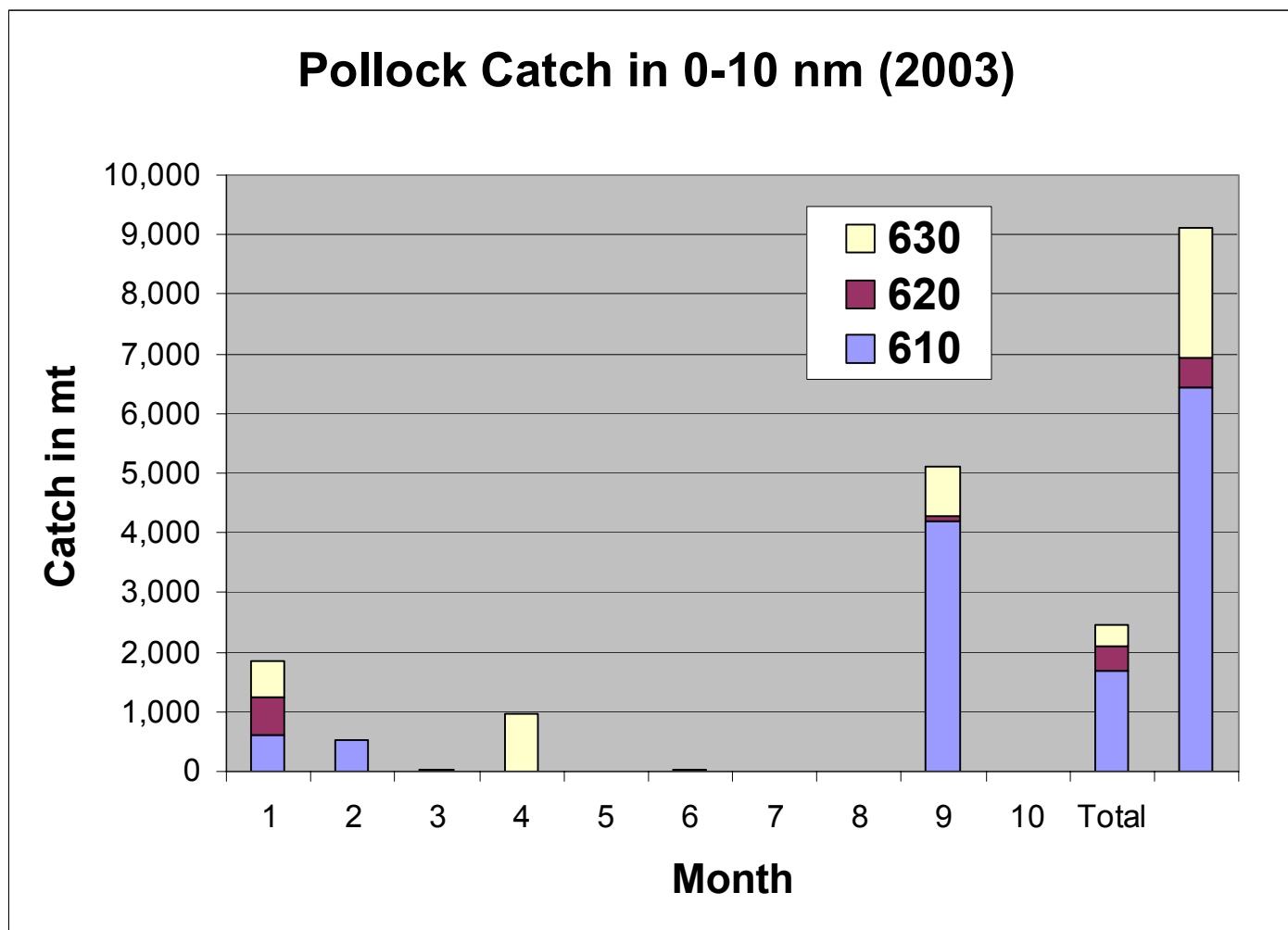


Table 1. Summary of the area closed or opened by each area component of the action.

Site	Fishery Description	Closure area (nm)		Area Opened (km ²)				Area Closed (km ²)			
		Current	New	0-3	3-10	10-20	Total	0-3	3-10	10-20	Total
Marmot Is. (r)	Trawl, pollock, A&B seasons	15	10	0	0	1,004	1,004				
Atkins Island (r)	Trawl, P. cod, annual	20	10	0	0	1,836	1,836				
Sea Otter Is. (h) east	Trawl, pollock, A&B seasons	10	20					0	0	255	255
Sea Otter Is. (h) west	Trawl, pollock, A&B seasons	10	20					0	0	239	239
Puale Bay (h)	Trawl, pollock, A&B seasons	10	3	0	771	0	771				
Cape Douglas (Shaw) (h)	Trawl, pollock, A&B seasons	10	20					0	0	2,328	2,328
Kak Is. (h)	Pot, P. cod, annual	20	3	0	634	1,486	2,120				
Kilokak Rocks	Pot, P. cod, annual	0	10					74	660	0	734
Castle Rock (h)	Pot, P. cod, annual	3	0	94	0	0	94				
Total area open or closed by zone				94	1,405	4,326	5,826	74	660	2,823	3,557
Resulting change in amount of area open by zone				20	746	1,503	2,269				

Table 2. Summary of area closed by fisheries.

		Amount of area in km ² by zone			
		0-3 nm	3-10 nm	10-20 nm	Total (0-20 nm)
Base value for Steller sea lion critical habitat (CH)		6,128	46,109	78,997	131,234
Trawl Pollock	CH Area closed under 2001 BiOp	6,128	38,165	38,243	82,536
	Resulting change in closure area by zone	0	-771	1,819	1,047
	Resulting change in closure area in percent	0.0%	-2.0%	4.8%	1.3%
Trawl P. cod	CH Area closed under 2001 BiOp	6,128	38,165	38,243	82,536
	Resulting change in closure area by zone	0	0	-1,836	-1836
	Resulting change in closure area in percent	0.0%	0.0%	-4.8%	-2.2%
Pot P. cod	CH Area closed under 2001 BiOp	3,530	13,325	21,385	38,240
	Resulting change in closure area by zone	-20	25	-1,486	-1,480
	Resulting change in closure area in percent	-0.6%	0.2%	-6.9%	-3.9%

Table 3 Summer and winter non-pup counts by site.

Summer Non-pup Counts

Year	Marmot Is. (R)	Atkins Island (R)	Sea Otter Is.	Puale Bay	Cape Douglas (Shaw)	Kak Is.	Castle Rock	Kilokak Rocks
1957	3866	4995					600	
1976	9862		541	3166			401	
1977		2726						
1978	8506	3943					541	
1979	8450	5000						
1985	4983	1562	335	834			12	
1986	8819	1129						
1987		84					258	
1988	3460							
1989	2331	755	450	309			79	
1990	1766	728	164	387		185	75	
1991	1458	616	122	296		172	56	
1992	1698	844	0	278		132	128	
1994	1091	571	206	264		184	152	167
1995					0			
1996	1102	624	170	168	51	201	98	120
1997	780	544	100	143	248	235	76	90
1998	759	602	123	136	0	236	155	76
2000	698	537	118	84	119	70	38	67
2002	894	560	68	99	52	108	75	88
Max	9862	5000	541	3166	248	236	600	167
Min	698	84	0	84	0	70	12	67
AVG (90-02)	1138	625	119	206	78	169	95	101
Rate (90-02)	-49%	-23%	-59%	-74%	n/a	-42%	0%	-47%

Winter Non-pup Counts

Year	Marmot Is. (R)	Atkins Island (R)	Sea Otter Is.	Puale Bay	Cape Douglas (Shaw)	Kak Is.	Castle Rock	Kilokak Rocks
1976				1704				
1977		931		14234			613	
1993	398	110	164	103		60	123	
1994	192	146	143	86		51	92	
1995					0		5	
1997		28	95	40			0	50
1999	135	46	111	59	0	73	93	86
Max	398	931	164	14234	0	73	613	86
Min	135	28	95	40	0	51	0	50
AVG (93-99)	242	83	128	72	0	61	63	68

Table 4 Pacific cod and pollock catch in 2003 by zone.

2003 Gulf of Alaska Pacific Cod Catch								
Month	0-10 nm	10-20 nm	Shelikof	All CH	Not CH	Total	% In 0-10	% In CH
1	1,525	1,032	29	2,585	6,957	9,542	16%	27%
2	4,978	2,762	64	7,804	2,292	10,096	49%	77%
3	154	668	41	863	738	1,601	10%	54%
4	190	841	87	1,118	456	1,574	12%	71%
5	378	213	40	631	414	1,045	36%	60%
6	47	55	48	151	361	512	9%	29%
7	223	157		380	2,401	2,780	8%	14%
8	182	122	14	319	318	636	29%	50%
9	1,624	1,881		3,505	9,254	12,759	13%	27%
10	32	28	5	65	22	87	36%	75%
Total	9,334	7,761	327	17,421	23,211	40,633	23%	43%

2003 Gulf of Alaska Pollock Catch								
Month	0-10 nm	10-20 nm	Shelikof	All CH	Not CH	Total	% In 0-10	% Inside
1	528	4,105	11	4,644	814	5,458	10%	85%
2	16	9,042	79	9,136	12	9,148	0%	100%
3	962	4,055	191	5,208	3,236	8,444	11%	62%
4	4	2,941	4	2,949	2,264	5,213	0%	57%
5	26	15		41	232	273	10%	15%
6	3	415		419	41	460	1%	91%
7	0	125		126	178	304	0%	41%
8	5,119	5,801	189	11,109	901	12,010	43%	92%
9	0	19	0	19	4	23	0%	82%
10	2,454	3,013	210	5,676	2,275	7,951	31%	71%
Total	9,112	29,530	684	39,326	9,956	49,282	18%	80%